

ABSTRACT OF THE DISCLOSURE

A virtual private network (VPN) service is provided through a shared network infrastructure, with customer edge (CE) devices each having a provider edge (PE) interface having a single layer 3 address in the VPN. An address resolution request message is transmitted by a first CE device on plural layer 2 virtual circuits of its PE interface. The address resolution request message including the layer 3 address allocated to a second CE device of the VPN. In response to reception of such request message at the second CE device, an address resolution response message is returned to the first CE device. In response to reception of this response message, the first CE device maps the layer 3 address allocated to the second CE device to a virtual LAN identifier of the layer 2 virtual circuit on which the response message is received.